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ABSTRACT

A study investigated the use of study guides as instructional tools and compared the effectiveness of study guides with and without analogies. Seventy-four undergraduate students in three upper division education classes studied three passages about three obscure religions (Manichaeism, Jainism, and the Druze religion) with and without the aid of two types of study guides. One study guide analogized the religions to Christianity, and one did not employ analogies. Both study guides were written in multiple-choice, short answer, and essay format. Within each class, students were randomly divided into three groups for comparison, and each subject was given all three passages to study in different sequences, studying one passage per treatment condition. Results revealed a significant interaction between text and treatment, but with a small effect size. Results also revealed: (1) that the Manichaeism text produced scores significantly different from the combination of Druze and Jainism scores across all three treatments; (2) that the Manichaeism study guide treatments produced scores significantly different from those of the other two treatments; and (3) that the Druze analogical study guide treatment produced scores significantly different from those of the other treatments, but that the Jainism analogical study guide treatment was not significantly different from the other two treatments. The disordinal interaction effect raised questions with reference to embedded analogies (e.g., the Manichaeism text contained words that closely resembled words common to Christianity), emotional subject matter, and textual differences. Further research is needed. (One table of data is included; 21 references are attached.) (KEH)

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# The Use of Study Guides With and Without Analogies in Directing Learning from Texts

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The Use of Study Guides With and Without Analogies in Directing Learning from Texts

In a recent survey of classroom teachers, Peterman, Dunning, and Tama (1989) found that 62% of respondents use study guides at least once a week, and that 91% use study guides as a basis for classroom discussion. The use of study guides to facilitate learning from texts has long been advocated (Earle, 1969; Herber, 1970; McClain, 1981; Tutolo, 1977; Vacca, 1977), and many different types of guides have been proposed (Cunningham & Shablak, 1975; Davey, 1986; Olson & Longnion, 1982; Richgels & Hansen, 1984; Wood, 1988). By 1984, however, Tierney and Cunningham (p. 626) reported that empirical support for the use of study guides was sparse. Since then, little more has appeared. The recent research (Bean, Singer & Cowan, 1985; Hayes, 1988) does suggest support for study guides, though this research has focused on the efficacy of incorporating analogies in the guide material. The effectiveness of the study guides in these studies may have been due to the presence of analogies, which other research would strongly suggest (Alexander, 1988; Bean & Cowan, 1989; Gick & Holyoak, 1983; Hayes & Tierney, 1982; Simons, 1984; Vosniadou & Ortony, 1983; Vosniadou & Schommer, 1988). The present research investigated the use of study guides as instructional tools and made a direct comparison of study guides with and without analogies.

## Method

Procedure. Seventy-four undergraduate students in three upper division education classes studied three passages with and without

the aid of two types of study guides. Within each class, students were randomly divided into three groups for comparison. A within-subjects true experimental design was used. Each subject was given all three passages to study in different sequences, studying one passage per treatment condition. Order of treatment was also counterbalanced across classes. Thus, both order of text presentation and of treatment were controlled.

Materials. Materials were three similarly structured passages on three obscure religions, each approximately 1,000 words in length. Two study guides were written in multiple-choice, short answer and essay format for each passage. One study guide analogized the religion to Christianity, and one did not employ analogies. The criterion measure was a 60-item researcher-constructed multiple-choice test, 20 items per passage. None of the test items repeated items in the study guides.

All materials, including a self-report background knowledge measure, were given to students in individual packets. No teaching was performed; subjects learned the material independently. All materials were written by the researchers.

## Results

A significant interaction between text and treatment was observed $F(4,204) = 3.41$ ($p = .0101$), but with a small effect size ($\eta^2 = .06$). Additionally, a significant main effect for treatment was observed, $F(2,204) = 7.09$ ($p = 0011$), with a small effect size ($\eta^2 = .06$). Orders of treatment by text presentation were not significant at any level. Results of three complex contrasts indicated that the Manichaeism text produced scores significantly

different from the combination of Druze and Jainism scores across all three treatments: $\Psi_1 = 2.97$, $F(1,204) = 4.496$ ($p = .0993$); $\Psi_2 = -3.28$, $F(1,204) = -5.59$ ($p = .054$); $\Psi_3 = 3.52$, $F(1.204) = 6.44$ ($p = .0345$). Results of two simple contrasts indicated that the Manichaeism study guide treatments produced scores significantly different from the other two treatments: $\Psi_4 = 3.62$, $F(1,204) = 20.168$ ($p = .0002$); $\Psi_5 = 2.5$, $F(1,204) = 9.81$ ($p = .0048$). Results of two complex contrasts indicated that the Druze analogical study guide treatment produced scores significantly different from the other two treatments: $\Psi_6 = -2.96$, $F(1,204) = 4.55$ ($p = .064$); but that the Jainism analogical study guide treatment was not significantly different from the other two treatments: $\Psi_7 = -1.63$, $F(1,204) = 1.35$ ($p = .4902$). All p-values have been adjusted for multiple testing, and alpha was set at .10 to reflect that adjustment.

## Discussion

Several different arguments may serve to explain the strong text by treatment interaction. One religion, Manichaeism, is more obviously comparable to Christianity than the other two religions, Druze and Jainism. The passage on Manichaeism contained some words that may have prompted spontaneous comparisons to Christianity by readers. The Manichaeism text of necessity used words closely resembling words common to Christianity, such as "Baptistai" and "apostle." These words may be viewed as analogies embedded in the text, and they may have stimulated subjects to make comparisons. Since 12% of the subjects spontaneously wrote their own analogies on the materials, other subjects may also have made mental comparisons

without recording their thoughts. The non-analogical Manichaeism study guide treatment was most effective by far, indicating that spontaneous analogies formed by the reader may be more effective than pre-selected analogies supplied in a study guide. Additionally, the analogies in the study guide may have interfered with the spontaneous analogies already formed by the reader which clashed with the analogies in the study guide, thereby depressing the scores of the Manichaeism analogical study guide treatment.

The choice of religions as subject matter may have stimulated the emotions of more than a few of the subjects, although only two of the 77 subjects recorded negative comments on any of the materials. The subjects' names were on their packets; some subjects may not have wished to reveal their personal antagonism for the subject matter. Hence, their emotions may have affected the results of the study.

An argument can be made for playing down the disordinal interaction between text and treatment found in this study. Three different texts were chosen for the specific purpose of counterbalancing any text by treatment interaction that may have occurred. Using three texts also reduces the likelihood that results are an artifact of a particular text. Reading produces reaction to texts; the use of several texts can reasonably be expected to produce an interaction effect. Therefore, the main effects of the study supporting the researcher's hypothesis, i.e, that study guides of either type would produce higher scores on tests of learning from texts, may still be valid.

The study raises several questions. Would the same findings be replicated if divorced from emotion-laden materials? Would the guided practice offered by both forms of study guides remain beneficial? Also, the study guide treatments in this research stimulated subjects to spend twice as much time on task as did the unguided reading condition. This may be one of the more obvious benefits of study guides. We may wish to learn, however, if some other treatment that provides similar increase in study time can be as beneficial as the guided practice.

Another interesting question is raised by the disordinal interaction effect. The Manichaeism test scores for the non-analogical study guide treatment were far higher than those for the analogical study guide treatment, yet the guides asked parallel questions. The words in the Manichaeism text that closely resembled words common to Christianity may have induced some subjects to form their own comparisons of Manichaeism to Christianity, as indicated by the qualitatative results of the study. If so, those subjects would have been thinking actively during their initial reading of the text. It may be that analogies embedded in a text produce more active reading and learning than do analogies that are external to the text. The analogies in the Manichaeism analogical study guide may not have induced comparisons as attractive as those generated spontaneously during reading, and the subjects therefore may have processed the text more passively under the analogical study guide condition. Ideas originated by readers themselves necessarily would be processed more actively than ideas given to readers.

Further research is needed to ascertain whether the disordinal interaction effect is an artifact of the embedded analogies, the emotional subject matter, textual differences, or sampling error. If the latter three possiblities can be discounted, then investigation into the relative efficacy of analogies embedded in text or external to the text may shed light on aids that induce readers to think actively about informational texts.

Table 1

Mean Performance on Test of Learning from Passages

| | Treatment | | |
|---|---|---|---|
| Text | Control | Study Guide | Analogical Study Guide |
| Druze | 13.04 (3.14)[a] | 13.76 (3.06) | 14.88 (2.76)* |
| Jainism | 13.69 (2.66) | 13.96 (2.49) | 14.64 (2.87) |
| Manichaeism | 11.88 (3.75) | 15.50 (2.53)* | 13.00 (2.55) |

[a] Standard deviations are in parentheses

* Indicates significant p-value

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